EXHIBIT 10

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Smith et al.		
U.S. Patent No.:	8,249,446	Attorney Docket No.:	35548-0128IP1
Issue Date:	August 21, 2012		
Appl. Serial No.:	12/649,606		
Filing Date:	December 30, 2009		
Title:	METHOD AND APPARATUS FOR REGULATING ROGUE BEHAVIOR IN OPTICAL NETWORK TRANSMISSION DEVICES		

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 8,249,446 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

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Huawei Technologies Co., Ltd. ("Huawei" or "Petitioner") petitions for *Inter Partes* Review ("IPR") of claims 1, 4, 5, and 15 ("the Challenged Claims") of U.S. Patent No. 8,249,446 ("the '446 patent").

The '446 patent generally relates to techniques for regulating rogue behavior in optical transmission devices. The examiner allowed the '446 patent after the applicant argued that the prior art failed to teach "removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set" in issued claim 1. EX1002, 9, 16-25; *Infra*, Section II.B. The examiner, however, had an incomplete record at the time, and as detailed below, more pertinent prior art plainly disclosed these exact features and demonstrate the obviousness of claims 1, 4, 5, and 15 as a whole. If these teachings had been fully analyzed during prosecution, the '446 patent never would have issued. Review here is ripe and justified.

I. MANDATORY NOTICES—37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest—37 C.F.R. § 42.8(b)(1)

Huawei Technologies Co., Ltd.; Huawei Device USA, Inc.; Huawei Technologies USA Inc.; Huawei Investment & Holding Co., Ltd.; Huawei Device (Shenzhen) Co., Ltd.; Huawei Device Co., Ltd.; Huawei Tech. Investment Co., Ltd.; and Huawei Device (Hong Kong) Co., Ltd. are the real parties-in-interest. No other

parties had access to or control over this Petition, and no other parties funded this Petition.

B. Related Matters—37 C.F.R. § 42.8(b)(2)

WSOU Investments, LLC d/b/a/ Brazos Licensing and Development ("WSOU" or "Patent Owner")—the alleged Patent Owner—filed a first complaint against Petitioner asserting the '446 patent on March 22, 2020 in the U.S. District Court for the Western District of Texas (Case No. 6:20-cv-00209). Patent Owner voluntarily dismissed Petitioner from the first complaint without prejudice on June 17, 2020. On the same day, Patent Owner filed a second complaint at the Western District (Case No. 6:20-cv-00542), again asserting the '446 patent against Petitioner.

This second complaint was one of twelve patent lawsuits filed by Patent Owner against Petitioner on the same date:

Asserted Patent No.	Civil Case No. (W.D. Tex.)
6,882,627	6-20-cv-00533
7,095,713	6-20-cv-00534
7,508,755	6-20-cv-00535
7,515,546	6-20-cv-00536
7,860,512	6-20-cv-00537
7,872,973	6-20-cv-00538
8,200,224	6-20-cv-00539
8,417,112	6-20-cv-00540
9,084,199	6-20-cv-00541
8,249,446	6-20-cv-00542
6,999,727	6-20-cv-00543
8,429,480	6-20-cv-00544

None of the twelve asserted patents are related to the '446 patent as a

continuation/divisional. Petitioner is not aware of any disclaimers or reexamination certificates addressing the ’446 patent.

C. Lead And Back-Up Counsel—37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

Lead Counsel	Backup counsel
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D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR35548-0128IP1@fr.com

(referencing No. 35548-0128IP1 and cc'ing PTABInbound@fr.com and hawkins@fr.com).

II. PAYMENT OF FEES—37 C.F.R. § 42.103

Petitioner authorizes the Office to charge Deposit Account No. 06-1050 for the fee set in 37 C.F.R. § 42.15(a) and further authorizes payment for any additional fees to be charged to this Deposit Account.

III. REQUIREMENTS FOR IPR—37 C.F.R. § 42.104

A. Grounds for Standing Under 37 C.F.R. § 42.104(a)

Petitioner certifies that the '446 Patent is available for IPR and Petitioner is not barred or estopped from requesting IPR.

B. Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested

Huawei requests an IPR of the Challenged Claims on the grounds set forth in the table shown below, and requests that each of the Challenged Claims be found unpatentable. Further evidence and underlying analysis for each ground of rejection is set forth in Exhibit 1003, the Declaration of Robert P. McNamara, Ph.D. ("Expert Declaration"), referenced throughout this Petition.

Ground	'446 Patent Claims	Basis for Rejection
Ground 1	**1, 4, 5, 15**	Obviousness based on O'Byrne (US 2008/0138064)
Ground 2	**15**	Obviousness based on O'Byrne in view of Bernard (US 2008/0056719)

O'Byrne (published June 12, 2008) and Bernard (published March 6, 2008)

qualify as prior art under 35 U.S.C § 102(b) because these were published over a year before the earliest possible priority date (August 7, 2009).

IV. THE '446 PATENT

A. Brief Description

Generally, the '446 patent purportedly provides for a technique "for regulating rogue behavior in optical transmission devices." EX1001, Abstract. In particular, the '446 patent describes that the technique is implemented in an optical network termination (ONT) that includes an optical transmitter in a passive optical network (PON). *Id.*, Abstract, 2:61-3:14. The '446 patent describes that the ONT "monitor[s] a selected optical transmitter output indicator during at least one monitoring window, determin[es] whether an output threshold has been exceeded during the at least one monitoring window and, if so, setting a suspect rogue flag in a register." *Id.*, 3:1-5; *see also id*, 6:27-36, 6:60-7:10. The technique further "read[s] the register to determine if the suspect rogue flag has been set." *Id.*, 3:6-15, 6:28-30. The technique then "determin[es] whether to disable the optical transmitter based on the register reading," and "generat[es] a command to disable the optical transmitter if required." *Id.*, 3:6-15, 7:27-39, 7:45-47. The technique can remove (or "un-set") the suspect rogue flag "if the suspect rogue flag is set and a subsequent monitoring step measures a value that does not exceed the threshold value." *Id.*, 7:10-14.

The ’446 patent includes 19 claims, of which claims 1, 15, and 19 are independent.

B. Summary of the Prosecution History of the ’446 Patent

The ’446 patent issued on August 21, 2012 from U.S. Patent Application No. 12/649,606 (“the ‘606 application”), which was filed on December 30, 2009 and claimed priority to Provisional Application No. 61/273,702 (filed on August 7, 2009). *See* EX1002.

During prosecution of the ’446 patent, the first office action rejected original independent claims 1, 15, and 20 based on a combination of Chiang (U.S. Patent No. 7,215,891) and Mizutani (U.S. Application Publication No. 2010/0067901). EX1002, 29-33. The same office action indicated dependent claims 11-12 and 17 contained allowable subject matter. *Id.*, 34.

In response, claims 15 and 20 were amended to include the allowable subject matter of claim 17. *Id.*, 19-20. Claim 1 was amended to remove one of the claimed steps (“reading the register, by the optical network component, to determine if the suspect rogue flag has been set”) and instead include the subject matter of claim 4 (“removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set”). *Id.*, 17. The removed step was included in new dependent claim 21. *Id.*, 21. The applicant contended that the

subject matter of original claim 4 would not have been obvious over the combination of Chiang and Mizutani. *Id.*, 22-24.

In response, claims 1-3, 5-16, and 18-21 were allowed with no reason for allowance stated. *Id.*, 9. Allowed independent claims 1, 15, and 20 were issued as claims 1, 15, and 19 of the '446 patent. As explained below, the O'Byrne and Bernard references, which were never considered by the examiner, plainly disclose the elements of issued claims 1, 15, and 19, including the elements of original dependent claims 4 and 17 that were rewritten into the independent claims to obtain allowance. EX1003, ¶¶30, 50-150.

V. Level of Ordinary Skill

The '446 patent was filed December 30, 2009, claiming priority to a provisional application filed on August 7, 2009. The evidence shows a person of ordinary skill in the art at the time of invention ("POSITA") would have had at least a Master's degree in electrical engineering, computer engineering, computer science, physics, or a related technical field, and at least 3-5 years of experience in the field of optical networking. EX1003, ¶18. Such experience could be obtained through research and study in a graduate program or through comparable exposure to research literature through industry employment working in the field of optical networking, and additional years of experience could substitute for the advanced-level degree. EX1003, ¶18.

VI. CLAIM CONSTRUCTION

Petitioner submits that all claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. § 42.100. The Related Litigation is at a very early stage, and a *Markman* hearing not scheduled until April 15-16, 2021. EX1103, 10. For purposes of this proceeding only, Huawei submits constructions for the following terms.

A. "rogue behavior" (claims 1 and 15)

The phrase "rogue behavior" means a behavior of an optical network component, such as an optical network termination/terminal (ONT), that represents improper optical transmission (e.g., "over-transmitting") that may be disruptive to network communications. EX1003, ¶46. This is consistent with the disclosure of the '446 patent. EX1001, 2:22-24 ("A rogue ONT is one that is currently over-transmitting, and therefore transmitting, at least part of the time, at the wrong times."), 4:17-18 ("The rogue behavior must be controlled because it is often if not always disruptive to network communications.").

B. "suspect rogue flag" (claims 1 and 15)

The term "suspect rogue flag" means an indicator of suspected rogue behavior, such as actual or possible improper optical transmission. EX1003, ¶47. This construction is consistent with the disclosure of the '446 patent. EX1001, 7:5-10 ("If the threshold is exceeded, at step 320 a flag is set indicating that rogue behavior is suspected. For convenience this will be referred to as a suspect rogue

flag.").

C. "monitoring window" (claims 1 and 15)

The phrase "monitoring window" is construed as a duration for which monitoring occurs, which may be set or varied from one implementation to another. EX1003, ¶48. The '446 patent uses this phrase in a consistent manner. EX1001, 6:35-39 ("The monitoring 310 is performed for a specific time, which may be referred to as the monitoring window. The length of the monitoring window may vary from one implementation to another, and in some embodiments is set by the network operator.").

D. "register" (claims 1 and 15)

The term "register" is construed as a memory device (or a part thereof) or other device for storing information. EX1003, ¶49. This is consistent with the disclosure of the '446 patent. EX1001, 6:5-7 ("Register 225, for example, may also be considered a part of the memory device 260."), 8:20-22 ("Note that when used herein, 'reading the register' connotes examining a memory device to see if the suspect rogue flag has been set.").

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

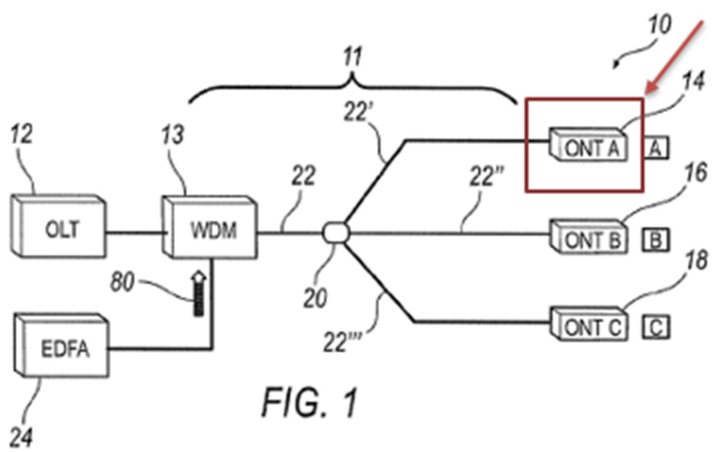
This request shows how the primary references cited above, alone or in combination with other references, disclose the limitations of the Challenged Claims, thereby invalidating claims 1, 4, 5, and 15 of the '446 patent. As detailed below, this request shows a reasonable likelihood that the Requester will prevail

with respect to claims 1, 4, 5, and 15 of the '446 patent.

A. GROUND 1 – O'Byrne (Claims 1, 4, 5, and 15)

O'Byrne discloses systems and methods of detecting and regulating a rogue transmitted in a passive optical network that renders claims 1, 4, 5, and 15 obvious.

Specifically, O'Byrne discloses "a system diagram of a communication system 10 for a passive optical network 11 (PON) having an optical line terminal (OLT) 12, a first optical network terminal (ONT) 14, a second ONT 16, a third ONT 18." EX1004, [0021]. In the system, OLT 12 is the optical line terminal and the ONTs 14, 16, and 18 are the optical transmitters. EX1004, [0023], [0026].



EX1004, FIG. 1 (annotated)

O'Byrne explains that in some cases the "ONTs may malfunction and interfere with the timeslots of ONTs on upstream communication" and in some "cases, the malfunctioning ONT is considered a rogue ONT." EX1004, [0003]. For example, O'Byrne explains that one "failure mode of ONT 14 is where the

laser (not shown) within ONT 14 transmits too much power when the laser is in the 'off' mode" and shows this in Figures 6A-6C. EX1004, [0038]-[0044]. "FIG. 6A is a chart illustrating optical power vs. current for a laser." EX1004, [0039]. "FIG. 6B is a chart illustrating normal optical power vs. time for a bit stream" during normal operation. EX1004, [0040]-[0041]. "FIG. 6C is a chart illustrating abnormal optical power vs. time for a bit stream" for an abnormal, malfunctioning laser. EX1004, [0042]-[0043]. The malfunctioning "zero" value 232 of Figure 6C is abnormally high as compared to the "zero" value 222 as shown in Figure 6B, making it difficult to distinguish a "one" value from a "zero" value based on optical power. EX1004, [0042]-[0043]. This causes "the difference in optical power between abnormal logical 'zero' 232 and 'one' value 234 is significantly reduced from normal operating conditions described in FIG. 6B." EX1004, [0042]. Thus, such "abnormal logical 'zero' 232 indicat[es] a malfunctioning laser." EX1004, [0042].

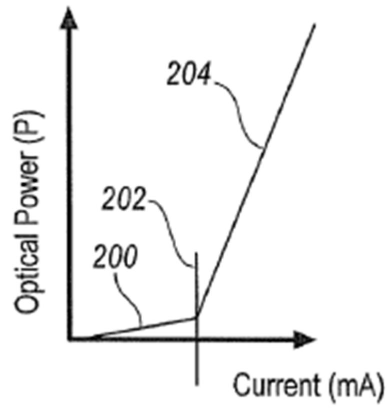


FIG. 6A

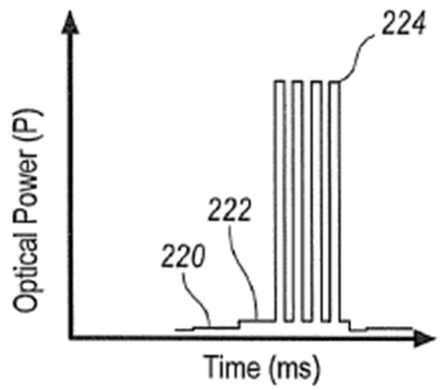


FIG. 6B

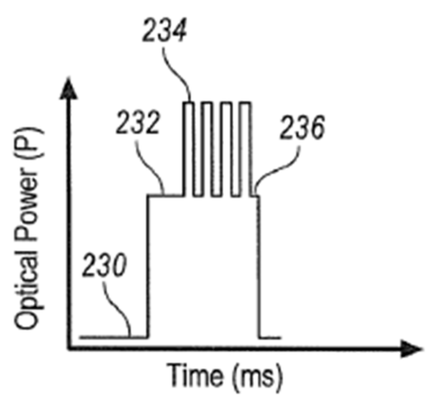


FIG. 6C

EX1004, FIGS. 6A-6C.

O'Byrne discloses how to detect whether an ONT has become a rogue ONT as well as how to "take action and command the rogue ONT to take a corrective action." EX1004, [0020]. Two examples described in O'Byrne include monitoring and correcting by the ONT itself (Figure 9) and monitoring the ONT by the OLT (Figure 10). Both methods/systems render claims of the '446 patent obvious, and accordingly, we discuss both below.

With respect to Figure 9, O'Byrne describes an agent on the ONT monitoring the ONT for rogue behavior. EX1004, [0065] ("FIG. 9 illustrates a further embodiment of an agent 900 (similar to the agent explained in detail regarding FIG. 5) that monitors and modifies (corrects) the operation of rogue ONT 14."), *see also* [0066]-[0072]. Specifically, "At step 910, the status of various components of possible rogue ONT 14 is determined; for example, the status of hardware sub-components such as chip-level errors (e.g., laser error, interface chip errors, encryption errors), process timing overruns, and upstream time-slot 60, 62, 64 overruns." EX1004, [0066]. At steps 912 and 916, the ONT determines whether and what type of problem is causing the ONT to have rogue behavior. EX1004, [0067] ("ONT 14 determines whether a hardware problem is deemed to exist based on data collected in step 910."), [0069]. At steps 914 and 918, corrective action is taken. EX1004, [0068], [0070] ("ONT 14 halts processes that are behaving outside of predetermined norms"). Afterwards, monitoring

continues back at step 910. EX1004, [0072]. In addition to detecting the status of ONT 14, O'Byrne also teaches the status of the ONT can be updated or corrected from abnormal to normal. EX1004, [0036], [0055].

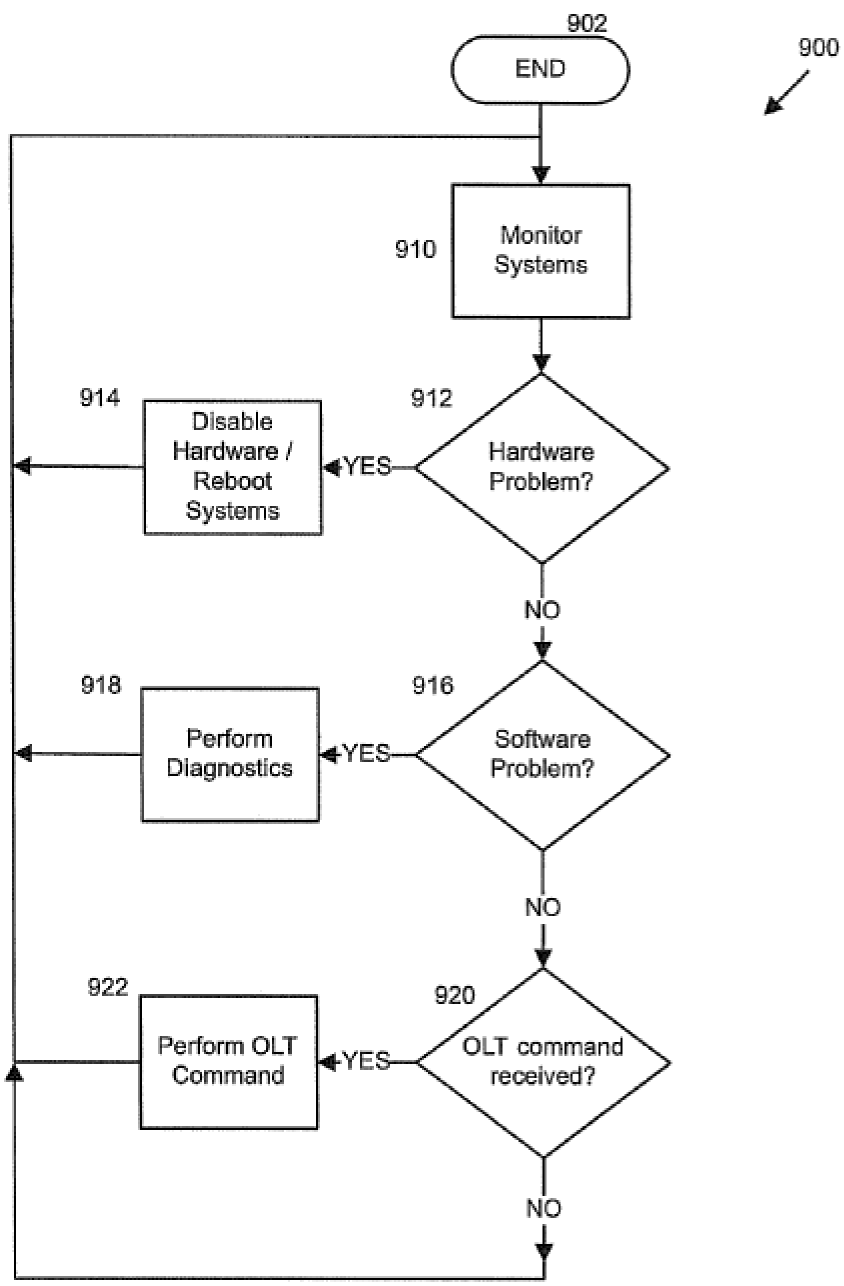


FIG. 9

EX1004, FIG. 9.

With respect to Figure 10, O'Byrne describes the OLT monitoring the ONT for rogue behavior. EX1004, [0073] ("FIG. 10 illustrates an embodiment of an OLT agent 1000 that monitors and corrects the operation of a possible rogue ONT 14."); EX1003, ¶39. Specifically, "At step 1010, OLT 12 monitors ONT 14 and records performance information as well as alarm information related to ONT 14." EX1004, [0073]. At steps 1012, 1016, and 1020, the OLT 12 determines whether and what type of problem is causing the ONT 14 to have rogue behavior. EX1004, [0075]-[0079]. At steps 1014, 1018, and 1022, corrective action is taken. EX1004, [0075]-[0079]. At step 1030, the ONT 14 is reactivated after a predetermined time. EX1004, [0081].

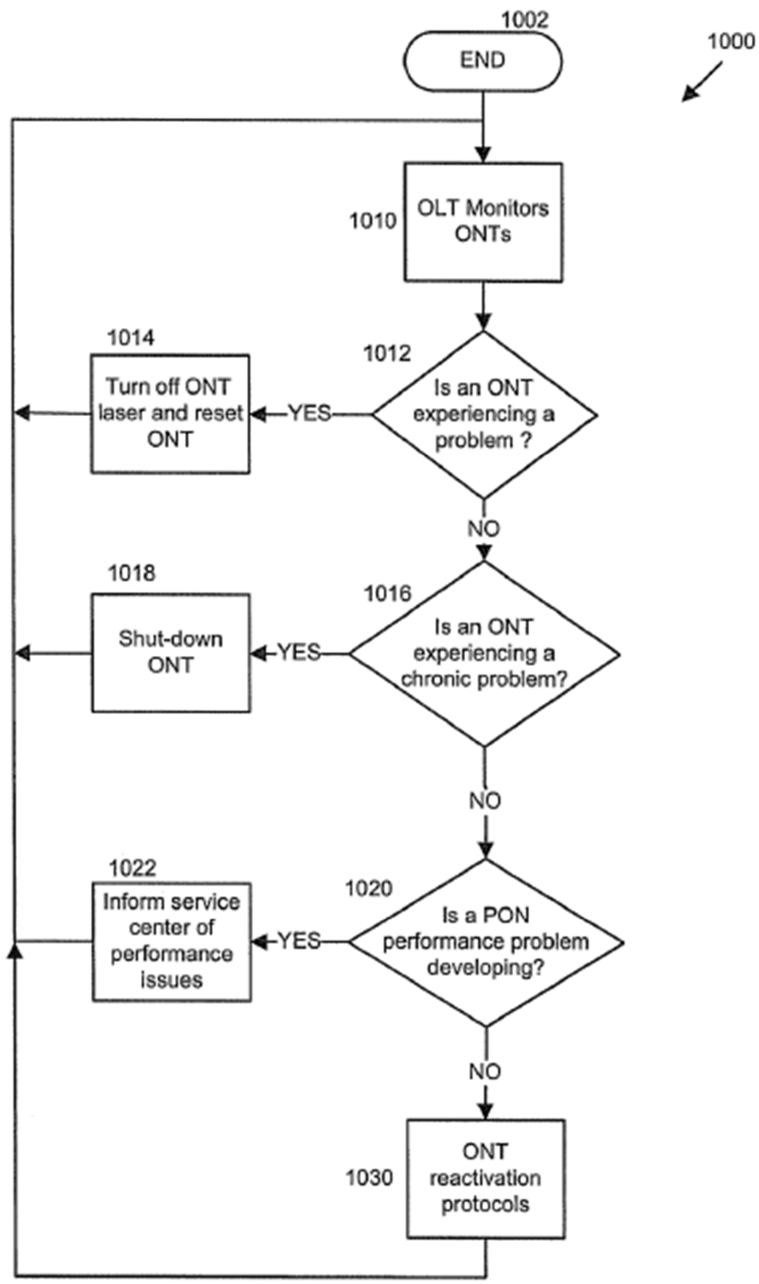


FIG. 10

EX1004, FIG. 10.

As described further below, these disclosures with respect to Figure 9 and Figure 10 as well as the other disclosure throughout O'Byrne teaches systems and

methods of detecting and regulating a rogue transmitted in a passive optical network that renders claims 1, 4, 5, and 15 obvious. EX1003, ¶¶40, 50-136.

[1.pre] "A method of regulating rogue behavior in an optical network component comprising an optical transmitter, the method comprising:"

To the extent that the preamble is limiting, O'Byrne discloses the recited method. EX1003, ¶51. O'Byrne generally describes an ONT as an ***optical network component comprising an optical transmitter***, just as the '446 patent's disclosure. EX1004, [0021]; EX1001, 1:18-24 ("The present invention relates generally to the field of optical communication networks, and, more particularly, to a method and apparatus for detecting rogue behavior in a PON optical network component, such as an ONT."). The ONT described in O'Byrne is part of a "communication system 10 for a passive optical network 11 (PON)," and includes a laser (***optical transmitter***) for "upstream" optical communications. EX1004, [0021], [0023], [0038]. O'Byrne explains that in some cases the "ONTs may malfunction and interfere with the timeslots of ONTs on upstream communication" and in some "cases, the malfunctioning ONT is considered a rogue ONT." EX1004, [0003].

O'Byrne describes two different methods of regulating rogue behavior that each render claim 1 obvious: regulating by an agent of the ONT itself (Figure 9) and regulating by the OLT (Figure 10). EX1003, ¶52. Each claim element will be

separately mapped to each portion to show how O'Byrne renders the claims obvious in two ways. While Petitioner maintains that both methods render the claims obvious,[1] a determination by the Board that any one of O'Byrne's methods renders the claims obvious is sufficient to justify institution.

Regulating By ONT (FIG. 9)

One example of a method by a system "that monitors and modifies (corrects) the operation of rogue ONT 14" is shown and described with respect to O'Byrne's Figure 9. EX1004, [0065]-[0072]; EX1003, ¶52.

Regulating By OLT (FIG. 10)

Another example of a method by a system "that monitors and corrects the operation of a possible rogue ONT 14" is shown and described with respect to O'Byrne's Figure 10. EX1004, [0073]-[0081]; EX1003, ¶52.

[1.1] "monitoring a selected optical transmitter output indicator during at least one monitoring window;"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶53-74.

Regulating By ONT (FIG. 9)

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[1] Notably, Patent Owner accuses both an ONT and an OLT of infringement. EX1100, 158, *see also* 157-164.

In one example, O'Byrne teaches this with respect to Figure 9. EX1004, [0065]-[0072]; EX1003, ¶¶54-64. "At step 910, the status of various components of possible rogue ONT 14 is determined; for example, the status of hardware sub-components such as chip-level errors (e.g., laser error, interface chip errors, encryption errors), process timing overruns, and **upstream time-slot 60, 62, 64 overruns**. The status **monitoring** providing agent 900 with performance metrics of possible rogue ONT 14." EX1004, [0066], *see also* [0065] ("monitors…the operation of rogue ONT 14").

O'Byrne discloses that this monitoring occurs during at least one monitoring window, such as during "upstream time-slot 60, 62, 64." EX1004, [0066], *see also* [0067] (disclosing monitoring and detecting rogue behavior "in single instances or in a number of instances over a period of time").

O'Byrne explains that ONT 14 can disturb neighboring upstream time-slots when "ONT 14 transmits too much power when the laser is in the 'off' mode" and in an abnormal "zero" mode as described with respect to Figures 6A-6C. EX1004, [0038]-[0044]. O'Byrne explains that the ONT has an off state 200 where optical power is relatively low, a lasing region 204 where optical power is relatively high, and a lasing threshold 202 in between. EX1004, [0039]. This is shown in Figure 6A.

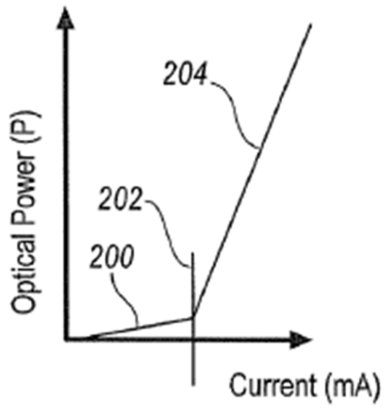

FIG. 6A

When optical power is below the lasing threshold 202 the ONT 14 provides an "off" value 220, when optical power is at the lasing threshold 202 the ONT 14 provides a "zero" value 222, and when optical power exceeds the lasing threshold 202 the ONT 14 provides a "one" value 224. EX1004, [0040]. This is shown in Figure 6B.

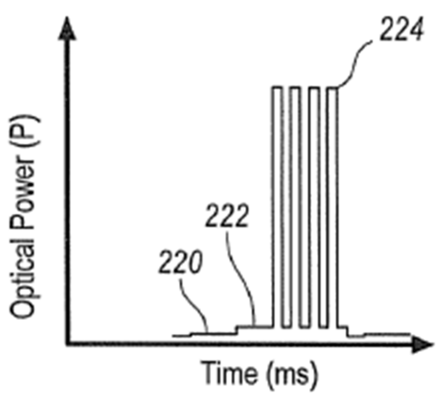

FIG. 6B

When, however, the ONT 14 attempts to provide a "zero" value 222 but instead exceeds the lasing threshold 202, then "abnormal logical 'zero' 232 optical power is significantly higher than the normal logical 'zero' of FIG. 6B." EX1004,

[0042]. This can make it difficult or impossible for the system to function during the first upstream time slot 60—which is the time reserved for the ONT 14 to transmit. EX1004, [0042]. This is shown in Figure 6C.

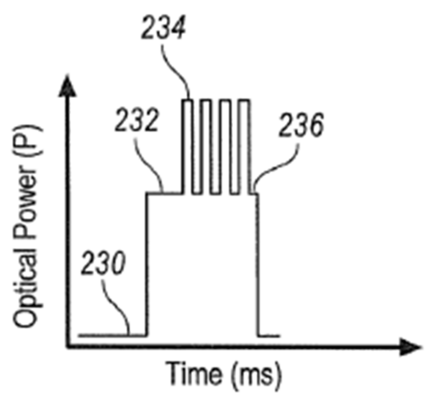

FIG. 6C

Moreover, when the ONT 14 malfunctions in this way by exceeding the lasing threshold 202 during second time-slot 62 and third time-slot 64, then "upstream communications of ONTs 16 and 18 are interrupted or otherwise degraded by the abnormal optical power continuously present on optical path 22." EX1004, [0043].

Further, with respect to Figure 5, O'Byrne teaches: "ONT 14 may selectively monitor its own internal processes to detect possible malfunctions using an agent. These internal features may include software features, storage performance, throughput, and hardware status." EX1004, [0035]. "The agent, for example, determines whether certain processes have extended beyond their normal execution times (e.g., 10 ms is allowed for execution time in a normal operational

profile). If so, the process is deemed to be operating in an undefined state because the process has overrun the allocated execution time." EX1004, [0036].

Accordingly, these teachings by O'Byrne meet this claim element for monitoring a selected optical transmitter output indicator (e.g. amount of optical power, a period of time, or an amount of power past a threshold period of time, or other laser errors) during at least one monitoring window (e.g. one or all of the time slots 60, 62, and 64). EX1004, [0066]-[0067]; EX1003, ¶61.

To the extent that O'Byrne does not explicitly state that the method described with respect to Figure 9 includes monitoring a selected optical transmitter output indicator (e.g. amount of optical power, a period of time, or an amount of power past a threshold period of time, or other laser errors) during the time slots 60, 62, and 64, a POSITA would have been prompted to do so in view of O'Byrne's teachings with respect to Figures 3, 5, and 6A-6C. Indeed, multiple reasons would have prompted a POSITA to apply O'Byrne's teachings regarding monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 (e.g. as described with respect to Figures 3, 5, and 6A-6C), to the method described with respect to O'Byrne's Figure 9.

First, a POSITA would have been prompted to apply O'Byrne's teachings regarding monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 to the method described with respect to O'Byrne's Figure 9 in

order to detect and rapidly respond to a rogue ONT overloading the PON. EX1003, ¶63. O'Byrne teaches that one "failure mode of ONT 14 is where the laser (not shown) within ONT 14 transmits too much power when the laser is in the 'off' mode" and teaches that this problem can be addressed by monitoring optical power within the time slots and taking corrective action as appropriate. EX1004, [0038]-[0043] (disclosing monitoring "the abnormal optical power continuously present on optical path 22"), FIGS. 6A-6C. O'Byrne explains the well-known problems as follows:

> Further, an ONT may **overload the OLT with too much optical power**. The overload may occur in its own TDM **timeslot** or in adjacent **timeslots**. The result of the overload, may include, for example, either an inability for the OLT to receive the desired signal or an interference with other ONTs. This is especially an issue where the rogue ONT is optically close to the OLT, while the ONT with the desired signal is at the edge of the supported distance or optical budget. Additionally, the rogue ONT may confuse the PON to such an extent that a majority of the processing power of the PON is consumed and regular communication with the ONTs is interrupted.

EX1004, [0003] (emphasis added). Accordingly, a POSITA would have recognized that monitoring optical power during the time slots was a beneficial way for addressing these concerns. EX1003, ¶63.

Second, a POSITA would have been prompted to apply O'Byrne's suggestion for monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 to the method described with respect to O'Byrne's Figure 9 because O'Byrne specifically identifies such issues (in Figure 9) as being potential error conditions and teaches that these kinds of errors can be addressed by O'Byrne's suggestions (in Figures 3, 5, and 6A-6C). EX1003, ¶64. For example, O'Byrne's disclosure of errors due to "upstream time-slot 60, 62, 64 overruns" for Figure 9 would have prompted a POSITA to employ O'Byrne's other suggested solutions regarding time slot overruns in Figures 3, 5, and 6A-6C. EX1004, [0066], [0068]; EX1003, ¶64. Accordingly, by early 2009, a POSITA would have plainly recognized that O'Byrne's own disclosure suggests combining the related concepts taught in O'Byrne. EX1003, ¶64; EX1004, [0098] (confirming that O'Byrne's system "is capable of modification and variation"); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (claimed invention must be "more than" the "mere application of a known technique to a piece of prior art ready for the improvement").

<u>Regulating By OLT (FIG. 10)</u>

In another example, O'Byrne teaches this with respect to Figure 10. EX1004, [0073]-[0081]; EX1003, ¶¶65-74. "At step 1010, OLT 12 monitors ONT 14 and records performance information as well as alarm information related to

ONT 14." EX1004, [0074]. O'Byrne teaches monitoring multiple optical transmitter output indicators in multiple monitoring windows. EX1004, [0073]-[0081]. For one example, O'Byrne teaches monitoring "where ONT 14 is disturbing neighboring upstream time-slot 60, 62, 64." EX1004, [0074]. Such monitoring can be performed in a number of ways via the OLT itself or via the OLT in conjunction with the ONT, such as via a "power alarm," an "out of sequence alarm," and via recording "performance measurements." EX1004, [0074]; EX1003, ¶65. Indeed, O'Byrne's teachings with respect to Figure 10 are similar to its teachings with respect to Figure 9, as described further below. EX1003, ¶65.

As explained above with respect to the analysis of O'Byrne's disclosure of monitoring via the ONT (Figure 9) for this claim element (element [1.1]), O'Byrne teaches monitoring a selected optical transmitter output indicator (e.g. amount of optical power, a period of time, or an amount of power past a threshold period of time, or other laser errors) during at least one monitoring window (e.g. one or all of the time slots 60, 62, and 64) with respect to Figures 5 and 6A-6C. EX1004, [0035]-[0044], [0074], FIGS. 5, 6A-6C; EX1003, ¶66-71.

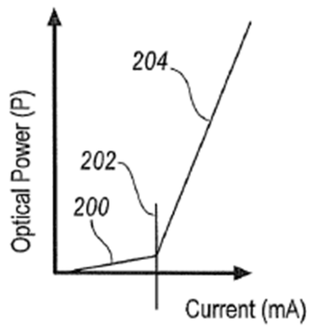

FIG. 6A

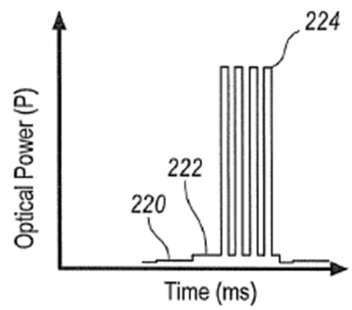

FIG. 6B

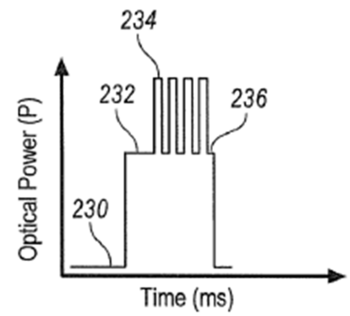

FIG. 6C

To the extent that O'Byrne does not explicitly state that the method described with respect to Figure 10 includes monitoring a selected optical transmitter output indicator (e.g. amount of optical power, a period of time, or an amount of power past a threshold period of time, or other laser errors) during the time slots 60, 62, and 64, a POSITA would have been prompted to do so in view of O'Byrne's teachings with respect to Figures 3, 5, and 6A-6C. Indeed, multiple reasons would have prompted a POSITA to apply O'Byrne's teachings regarding monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 (e.g. as described with respect to Figures 3, 5, and 6A-6C) to the method described with respect to O'Byrne's Figure 10. These motivating improvements are similar to those articulated above with respect to O'Byrne's Figure 9. EX1003, ¶72.

First, a POSITA would have been prompted to apply O'Byrne's teachings regarding monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 to the method described with respect to O'Byrne's Figure 10 in

order to detect and rapidly respond to a rogue ONT overloading the PON. EX1003, ¶73. O'Byrne teaches that one "failure mode of ONT 14 is where the laser (not shown) within ONT 14 transmits too much power when the laser is in the 'off' mode" and teaches that this problem can be addressed by monitoring optical power within the time slots and taking corrective action as appropriate. EX1004, [0038]-[0043], FIGS. 6A-6C. O'Byrne explains: "an ONT may **overload the OLT with too much optical power**. The overload may occur in its own TDM **timeslot** or in adjacent **timeslots**." EX1004, [0003] (emphasis added). Accordingly, a POSITA would have recognized that monitoring optical power during the time slots was a beneficial way for addressing these concerns. EX1003, ¶73.

Second, a POSITA would have been prompted to apply O'Byrne's suggestion for monitoring such optical transmitter output indicators during the time slots 60, 62, and 64 to the method described with respect to O'Byrne's Figure 10, because O'Byrne specifically identifies such issues (in Figure 10) being potential error conditions and teaches that these kinds of errors can be addressed by O'Byrne's suggestions (in Figures 3, 5, and 6A-6C). EX1003, ¶74. For example, O'Byrne's disclosure of errors due to "excessive power" for Figure 10 would have prompted a POSITA to employ O'Byrne's other suggested solutions regarding excessive power (as well as power past a threshold time period or other power

based laser errors) in Figures 3, 5, and 6A-6C. EX1004, [0081]; EX1003, ¶74. Moreover, O'Byrne's repeated discussion of the issue "where ONT 14 is disturbing neighboring upstream time-slot 60, 62, 64" for Figure 10 would have prompted a POSITA to employ, in those time slots, O'Byrne's other suggested solutions regarding such optical transmitter output indicators described in Figures 3, 5, and 6A-6C. EX1004, [0074]-[0079]; EX1003, ¶74. Accordingly, by early 2009, a POSITA would have plainly recognized that O'Byrne's own disclosure suggests combining the related concepts taught in O'Byrne. EX1003, ¶¶74; EX1004, [0098] (explaining that "the invention is capable of modification and variation"); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. at 417 (claimed invention must be "more than" the "mere application of a known technique to a piece of prior art ready for improvement").

[1.2] "determining whether an output threshold has been exceeded during the at least one monitoring window;"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶75-84.

<u>Regulating By ONT (FIG. 9)</u>

As explained above with respect to claim element [1.1], O'Byrne teaches monitoring optical power to determine whether the output threshold (i.e. an amount of power threshold 202, a period of time threshold (Figures 5 and 9), an amount of

power past a threshold period of time (Figure 6B), or other laser error threshold) has been exceeded during the monitoring window (time-slots 60, 62, 64) for the method of Figure 9. EX1003, ¶76; EX1004, [0003], [0038]-[0044], [0065]-[0072], FIGS. 3, 6A-6C, 9.

An example output threshold is shown in Figure 6A.

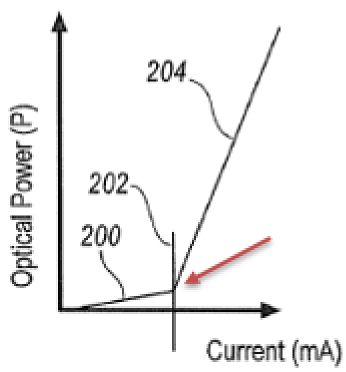

FIG. 6A

Example monitoring windows are shown in Figure 3.

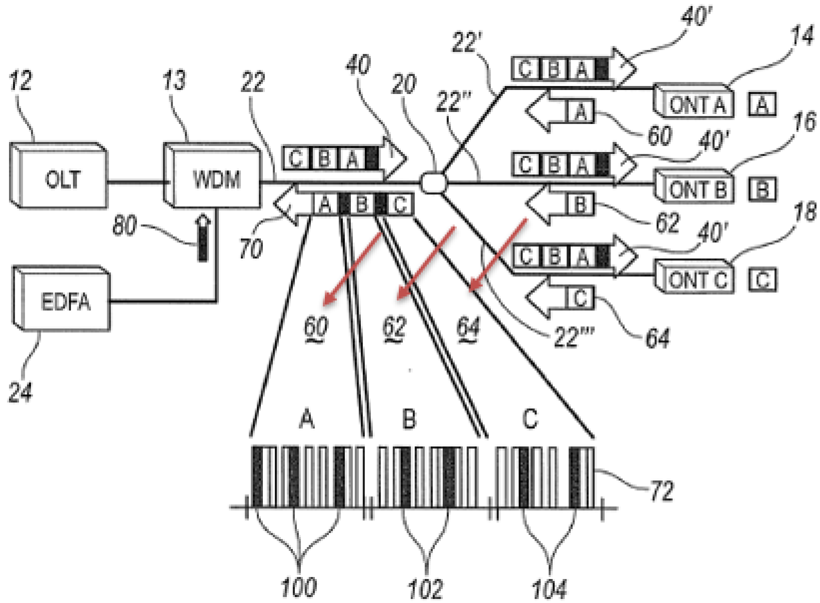

FIG. 3

Alternatively, a POSITA would have recognized that the claimed output threshold would be a normal optical power behavior as depicted in FIG. 6B. In particular, O'Byrne teaches how a monitored optical power (such as that shown in FIG. 6C) would be identified as abnormal based on comparison between the monitored optical power and a normal optical power (such as that depicted in FIG. 6B). EX1004, [0042] ("abnormal logical 'zero' 232 optical power is significantly higher than the normal logical 'zero' of FIG. 6B"). Therefore, a POSITA would have easily understood that O'Byrne's system would determine whether the monitored optical power (the monitored ***selected optical transmitter output indicator*** in element [1.1]) exceeds a normal optical power behavior (***output threshold***) during the monitored window (time-slots 60, 62, 64), in order to

identify whether and what type of problem is causing the ONT to have rogue behavior, and/or to take corrective action. EX1003, ¶78; EX1004, [0067]-[0070], *see also* [0035].

O'Byrne further explains: "The agent, for example, determines whether certain processes have extended beyond their normal execution times (e.g., 10 ms is allowed for execution time in a normal operational profile)." EX1004, [0036], *see also* [0067] ("Hardware problems can be imputed where hardware malfunctions are detected in single instances or in a number of instances over a period of time (e.g., whether the number of malfunctions exceed a normal operational profile).").

Accordingly, a POSITA would have recognized that the output threshold would be an amount of power threshold, a period of time threshold, or an amount of power past a threshold period of time as taught by O'Byrne—and O'Byrne teaches this method using each of these thresholds. EX1003, ¶80.

<u>Regulating By OLT (FIG. 10)</u>

As explained above with respect to claim element [1.1], O'Byrne teaches monitoring optical power to determine whether the output threshold (i.e. an amount of power threshold 202, a period of time threshold (Figures 5 and 9), an amount of power past a threshold period of time (Figure 6B), or other laser error threshold) has been exceeded during the monitoring window (time-slots 60, 62, 64) for the

method of Figure 10. EX1003, ¶81; EX1004, [0003], [0038]-[0044], [0073]-[0081], FIGS. 3, 6A-6C, 10.

An example output threshold is shown in Figure 6A.

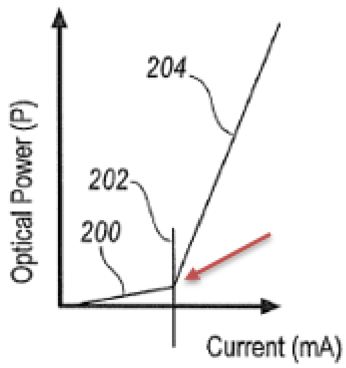

FIG. 6A

Example monitoring windows are shown in Figure 3.

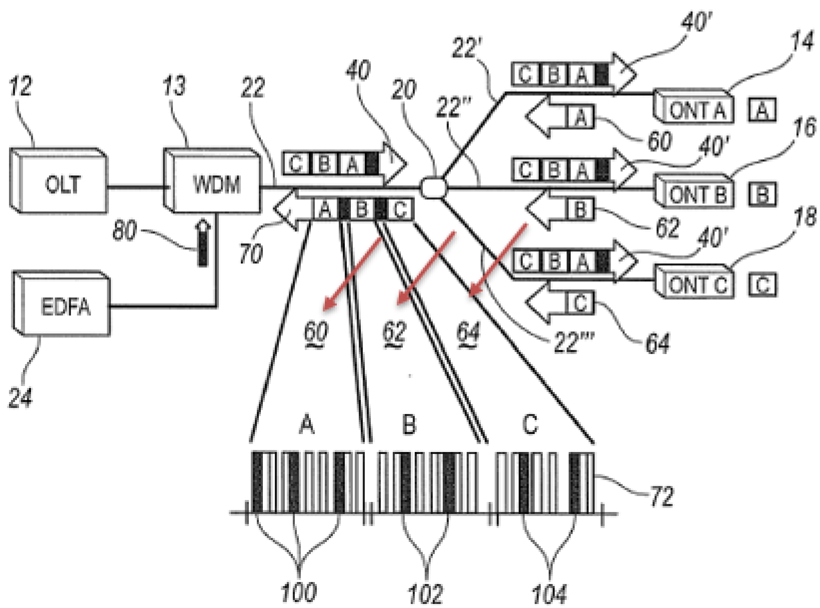

FIG. 3

Alternatively, a POSITA would have recognized that the claimed output threshold would be a normal optical power behavior as depicted in FIG. 6B. In particular, O'Byrne teaches how a monitored optical power (such as that shown in FIG. 6C) would be identified as abnormal based on comparison between the monitored optical power and a normal optical power (such as that depicted in FIG. 6B). EX1004, [0042] ("abnormal logical 'zero' 232 optical power is significantly higher than the normal logical 'zero' of FIG. 6B"). Therefore, a POSITA would have easily understood that O'Byrne's system would determine whether the monitored optical power (the monitored ***selected optical transmitter output indicator*** in element [1.1]) exceeds a normal optical power behavior (***output threshold***) during the monitored window (time-slots 60, 62, 64), in order to identify whether and what type of problem is causing the ONT to have rogue behavior, and/or to take corrective action. EX1003, ¶83; EX1004, [0075]-[0079].

Accordingly, the output threshold can be an amount of power threshold, a period of time threshold, or an amount of power past a threshold period of time—and O'Byrne teaches this method using each of these thresholds. EX1003, ¶84.

[1.3] "setting a suspect rogue flag in a register, if it is determined that an output threshold has been exceeded; and"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶85-90.

Regulating By ONT (FIG. 9)

In one example, O'Byrne teaches setting a suspect rogue flag in a register with respect to Figure 9. EX1004, [0065]-[0072]; EX1003, ¶86. "Additionally, **any faults** determined herein are **logged in a retained memory** so that faults causing a reset will be detected and prevented in a reset sequence for possible rogue ONT 14." EX1004, [0066] (emphasis added); EX1003, ¶86.

Additionally, O'Byrne explains that "FIG. 9 illustrates a further embodiment of an agent 900 (similar to the agent explained in detail regarding FIG. 5)," and O'Byrne discusses setting a suspect rogue flag in a register in further detail with respect to Figure 5. EX1004, [0065]; EX1003, ¶87. O'Byrne explains that "[a]t step 510, the status of ONT 14 is determined" and "[a]t step 520, a check is performed to the status determined in step 510." EX1004, [0035]-[0036]. Then "the agent becomes an intelligent 'watch dog' to determine if processes running on ONT 14 have a normal status or an undefined status" and if the ONT has an undefined (rogue) status, then "the undefined status event [is] saved in memory so that a repeating-reset condition is detected and avoided." EX1004, [0036]-[0037], *see also* [0082]-[0085].

Accordingly, O'Byrne teaches setting a suspect rogue flag (i.e. faults logged in memory and an undefined status event) in a register (memory) when it determines that an output threshold (an amount of power threshold 202, a period of

time threshold (Figures 5 and 9), an amount of power past a threshold period of time (Figure 6B), or other laser error threshold) has been exceeded. EX1003, ¶88.

Regulating By OLT (FIG. 10)

In another example, O'Byrne teaches setting a suspect rogue flag in a register with respect to Figure 10. EX1004, [0073]-[0081]; EX1003, ¶86. For example, O'Byrne teaches "OLT 12 monitors ONT 14 and **records performance information as well as alarm information** related to ONT 14." EX1004, [0074] (emphasis added), *see also* [0026], [0066], [0078], [0079], [0082], [0043] ("Thus, when an abnormal laser remains active in ONT 14, upstream communications of ONTs 16 and 18 are interrupted or otherwise degraded by the abnormal optical power continuously present on optical path 22. Such a condition **is monitored as a performance metric** of the devices connected to, and communicating with, communication system 10."). O'Byrne specifically teaches setting a suspect rogue flag when it is determined that optical power exceeds the threshold in "a neighboring upstream time-slot 60, 62, 64." EX1004, [0074] ("For example, where ONT 14 is disturbing neighboring upstream time-slot 60, 62, 64 (see FIG. 3), OLT 12 records such an interaction."), *see also* [0075], [0077], [0079] ("For example, OLT 12 **logs interference** between neighboring upstream time-slots 60, 62, 64.").

Accordingly, O'Byrne teaches setting a suspect rogue flag (i.e. performance information and alarm information) in a register (memory) when it determines that an output threshold (an amount of power threshold 202, a period of time threshold (Figures 5 and 9), an amount of power past a threshold period of time (Figure 6B), or other laser error threshold) has been exceeded. EX1003, ¶90.

[1.4] "removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set."

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶91-104.

<u>Regulating By ONT (FIG. 9)</u>

In the method of Figure 9, O'Byrne describes first monitoring and determining whether a problem exists, such as a power or time output threshold has been exceeded, in steps 910, 912, and 916. EX1004, [0065]-[0067], [0069]; EX1003, ¶92. When a problem is determined, O'Byrne describes taking corrective action, such as shutting down the laser, disabling other hardware, or terminating a process, in steps 914 and 918. EX1004, [0068], [0070]; EX1003, ¶92. At a time after the corrective action is taken, the system can "reboot chips…in order to bring ONT 14 back to a normal operating condition" or "restart the process." EX1004, [0068], [0070]; EX1003, ¶92. After the process in which a suspect rogue flag has

been set, the ONT then will restart and the process begins anew to monitor, set a flag, and correct as necessary. EX1004, [0068] ("bring ONT 14 back to a normal operating condition"), [0070] ("restart the process"), [0072] ("Control then proceeds to step 910 wherein the agent 900 continues monitoring."); EX1003, ¶92. If the output threshold is not exceeded in the subsequent monitoring windows after the restart, then the rogue flag would be unset (i.e. removed) rather than set. EX1004, [0066] (stating "any faults determined herein are logged in a retained memory so that faults causing a reset will be detected and prevented in a reset sequence for possible rogue ONT 14," which suggests that the memory will not include a fault if no fault exists), [0068] ("ONT 14 may reboot chips (not shown) under the control or embedded within ONT 14 in order to bring ONT 14 back to a normal operating condition" suggests that any flag would be removed upon reboot), *see also* [0036] (teaching "the status indicator being updated by the process when self-diagnostics are OK"); EX1003, ¶92.

Alternatively, if it is determined that O'Byrne's disclosure with respect to Figure 9 does not <u>explicitly</u> teach removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set, removing a suspect rogue flag would have been obvious in view of O'Byrne's disclosure of a health status. EX1003, ¶93. Specifically, O'Byrne describes setting a "health status"

which can be set to "Normal" or "Abnormal." EX1004, [0043]-[0044]. O'Byrne explains:

> The **health status is typically an indicator**, or number, corresponding to the health of a component. A high number indicates a device that is operating normally (e.g., within a normal operational profile), and a low number indicates a device is not operating normally (e.g., is malfunctioning beyond an acceptable range as compared with a normal operational profile). The value of the health status may also indicate the severity of a problem and **may be compared with thresholds** to determine an action to take regarding the component. Alternatively, the health status is also embodied, in some cases, as having two states of "**Normal**" and "**Abnormal**." Depending upon the component, any embodiment of a status may be tailored.

EX1004, [0044] (emphasis added). Accordingly, the system can set a suspect rogue flag by setting the health status to "Abnormal" and can remove the suspect rogue flag by setting the health status to "Normal." EX1003, ¶94. When combined with the method of O'Byrne's Figure 9 for monitoring optical power during time-slots, the resulting system would set the health status (rogue flag) to "Abnormal" when it is determined that the optical power improperly exceeds lasing threshold during a given time window (see steps 910, 912, and 916) and would set the health status to "Normal" (removing the rogue flag) when it is determined optical power no longer improperly exceeds the lasing threshold 202 during the time window (see steps 914, 918, and 922). EX1003, ¶94; *see also*

EX1004, [0055] (teaching after an ONT is imputed as a rogue ONT, further tests are performed to verify whether the ONT "was incorrectly charged and is not a rogue ONT").

Multiple reasons would have prompted a POSITA to apply O'Byrne's teachings regarding setting a health status to the system and method described with respect to O'Byrne's Figure 9.

First, a POSITA would have been prompted to apply O'Byrne's suggestion for setting a health status to the method of O'Byrne's Figure 9 for purposes of advantageously obtaining an up-to-date indication of health. EX1003, ¶96_. Specifically, O'Byrne teaches how to use the "health status" to distinguish between a "Normal" and an "Abnormal" operating ONT, and a POSITA would have recognized that doing so would be beneficial for determining whether and when an ONT is experiencing problems. EX1004, [0044]; EX1003, ¶96.

Second, a POSITA would have been prompted to apply O'Byrne's suggestion for setting a health status to the method described with respect to O'Byrne's Figure 9 in order to reduce the likelihood of false positives. EX1003, ¶97. For example, O'Byrne's method described with respect to Figure 9 contemplates detecting a problem (e.g. power exceeding a threshold during time-slots), recording the problem, shutting down components of the ONT in response to detecting and recording the problem, and reactivating the ONT after a time.

EX1004, [0065]-[0072]; EX1003, ¶97. A POSITA would have recognized that if a rogue flag were only set and never removed, false positives could occur after the ONT were reactivated even when functioning properly or when the ONT "was incorrectly charged." EX1003, ¶97; EX1004, [0055]. Accordingly, a POSITA would have understood that O'Byrne's teachings to use the "health status" indicator to both set and remove such flags would reduce the likelihood of false positives after reactivation of the ONT. EX1003, ¶97; *KSR*, 550 U.S. at 417 ("the mere application of a known technique to a piece of prior art ready for the improvement"); EX1004, [0098] (confirming that O'Byrne's system "is capable of modification and variation").

<u>Regulating By OLT (FIG. 10)</u>

In the method of Figure 10, O'Byrne describes first monitoring and determining whether a problem exists, such as a power or time output threshold has been exceeded, in steps 1010, 1012, 1016, and 1020. EX1004, [0074]-[0075], [0077], [0079]; EX1003, ¶98. When a problem is determined, O'Byrne describes taking corrective action, such as turning off or shutting-down the ONT, in steps 1014, 1018, and 1022. EX1004, [0076], [0078], [0080]; EX1003, ¶98. At a time after the ONT is turned off or shut down, the suspect rogue flag can be removed by sending a message to reactivate the ONT. EX1004, [0081]; EX1003, ¶98. O'Byrne explains: "[a]t step 1030, where ONT 14 has been shut down, ONT 14

may be sent a message to re-activate after a predetermined time. This allows OLT 12 to re-activate ONT 14 to verify if the error condition still exists." EX1004, [0081] (emphasis added).

Accordingly, O'Byrne teaches removing the suspect rogue flag by sending the message to reactivate. EX1004, [0081]; EX1003, ¶99. This is done during a monitoring window occurring after the suspect rogue flag has been set, because it is done after "a predetermined time" which occurs after the ONT was shut down due to the suspect rogue flag. EX1004, [0081]; EX1003, ¶99. This is done when it is determined that the output threshold was not exceeded because the time is when the "ONT 14 has been shut down" and the ONT does not output anything when it is shut down (with no output, it would not exceed the threshold). EX1004, [0081]; EX1003, ¶99. Accordingly, this limitation is met by O'Byrne's disclosure with respect to Figure 10. EX1003, ¶99.

Alternatively, if it is determined that O'Byrne's disclosure with respect to Figure 10 does not <u>explicitly</u> teach removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set, removing a suspect rogue flag would have been obvious in view of O'Byrne's disclosure of a health status. EX1003, ¶100. Specifically, O'Byrne describes setting a "health status" which can be set to "Normal" or "Abnormal." EX1004, [0043]-[0044].

Accordingly, the system can set a suspect rogue flag by setting the health status to "Abnormal" and can remove the suspect rogue flag by setting the health status to "Normal." EX1003, ¶101. When combined with the method of O'Byrne's Figure 10 for monitoring optical power during time-slots, the resulting system would set the health status (rogue flag) to "Abnormal" when it is determined that the optical power improperly exceeds lasing threshold during a given time window (see steps 1010, 1012, 1016, and 1020) and would set the health status to "Normal" (removing the rogue flag) when it is determined optical power no longer improperly exceeds the lasing threshold 202 during the time window (see step 1030). EX1003, ¶101.

Multiple reasons would have prompted a POSITA to apply O'Byrne's teachings regarding setting a health status to the system and method described with respect to O'Byrne's Figure 10.

First, a POSITA would have been prompted to apply O'Byrne's suggestion for setting a health status to the method described with respect to O'Byrne's Figure 10 for purposes of advantageously obtaining an up-to-date indication of health. EX1003, ¶103. Specifically, O'Byrne teaches how to use the "health status" to distinguish between a "Normal" and an "Abnormal" operating ONT, and a POSITA would have recognized that doing so would be beneficial for determining

whether and when an ONT is experiencing problems. EX1004, [0044]; EX1003, ¶103.

Second, a POSITA would have been prompted to apply O'Byrne's suggestion for setting a health status to the method described with respect to O'Byrne's Figure 10 in order to reduce the likelihood of false positives. EX1003, ¶104. For example, O'Byrne's method described with respect to Figure 10 contemplates detecting a problem (e.g. power exceeding a threshold during time-slots), recording the problem, shutting down an ONT in response to detecting and recording the problem, and reactivating the ONT after a time. EX1004, [0074]-[0081]; EX1003, ¶104. A POSITA would have recognized that if a rogue flag were only set and never removed, false positives could occur after the ONT were reactivated even when functioning properly. EX1003, ¶104. Accordingly, a POSITA would have understood that O'Byrne's teachings to use the "health status" indicator to both set and remove such flags would reduce the likelihood of false positives after reactivation of the ONT in step 1030. EX1003, ¶104. *KSR*, 550 U.S. at 417 ("the mere application of a known technique to a piece of prior art ready for the improvement"); EX1004, [0098] (confirming that O'Byrne's system "is capable of modification and variation").

[4] "The method according to claim 1, further comprising determining whether to disable the optical transmitter."

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶105-107.

Regulating By ONT (FIG. 9)

In the method of Figure 9, O'Byrne describes determining whether to disable the optical transmitter (laser) of the ONT in steps 914 and 918 of Figure 9. EX1004, [0065]-[0072]. In steps 912 and 914, the system "determines whether a hardware problem is deemed to exist based on data collected in step 910" and then "ONT 14 may shut down the laser (not shown) used for transmitting messages within an upstream time-slot 60, 62, 64." EX1004, [0067]-[0068]. In steps 916 and 918, the system "determines whether a software problem is deemed to exist based on data collected in step 910" and then "halts processes that are behaving outside of predetermined norms." EX1004, [0069]-[0070]; EX1003, ¶106.

Regulating By OLT (FIG. 10)

In the method of Figure 10, O'Byrne describes determining whether to disable the optical transmitter of the ONT in steps 1012, 1014, 1016, and 1018 of Figure 10. EX1004, [0075]-[0078]. In steps 1012 and 1014, the system determines "disturbance of neighboring upstream time-slots 60, 62, 64" and then sends a command to turn off and reset the ONT. EX1004, [0075]-[0076]. In steps 1016 and 1018, the system determines "ONT 14 is continuously interfering with neighboring upstream time-slots 60, 62, 64" and then sends a command to shut

down the ONT. EX1004, [0077]-[0078] ("At step 1018, rogue ONT 14 is deemed to have a chronic problem. In response, OLT 12 issues a command for rogue ONT 14 to shut down."); EX1003, ¶107.

[5] "The method according to claim 4, further comprising generating a command to disable the optical transmitter."

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶108-111.

<u>Regulating By ONT (FIG. 9)</u>

As describe above with respect to claim element [4] for Figure 9, O'Byrne discloses generating commands to shut down the laser and also to halt processes. EX1004, [0068], [0070]; EX1003, ¶109. A POSITA would have understood that for the ONT 14 to "shut down the laser," it would include a command to shut down the laser. EX1004, [0068], *see also* [0043] ("command a shutdown"); EX1003, ¶109. A POSITA would have also understood that for the ONT 14 to "halt[] processes that are behaving outside of predetermined norms," it would include a command to halt the processes. EX1004, [0070]; EX1003, ¶109. In embodiments where the method of Figure 9 is performed by "an agent 900 (similar to the agent explained in detail regarding FIG. 5) that monitors and modifies (corrects) the operation of rogue ONT 14," a POSITA would have understood that the command would come from the agent 900 and go to an appropriate component, feature, or

system within the ONT 14. EX1004, [0065]; EX1003, ¶110. Indeed, whether monitoring is performed "by ONT 14 itself or by other network components having the diagnostic capability," such systems would use a command to execute such disabling of an optical transmitter. EX1004, [0067], *see also* [0020] ("the agent may take action and command the rogue ONT to take a corrective action"), [0064], [0066], [0071]-[0072], [0076], [0078]; EX1003, ¶110.

Regulating By OLT (FIG. 10)

As described above with respect to claim element [4] for Figure 10, O'Byrne discloses generating a command to disable the optical transmitter by first turning it off and restarting and also by shutting the ONT down. EX1004, [0076] ("At step 1014, OLT 12 sends a command to reset the offending ONT 14, 16, 18"), [0078] ("In response, OLT 12 issues a command for rogue ONT 14 to shut down."), FIG. 10 ("Turn off" and "Shut-down"); EX1003, ¶111.

[15.pre] "Apparatus for regulating rogue behavior in an optical transmission device, comprising:"

To the extent that the preamble is limiting, O'Byrne discloses the recited apparatus. EX1003, ¶¶112-114. O'Byrne explains that in some cases the "ONTs may malfunction and interfere with the timeslots of ONTs on upstream communication" and in some "cases, the malfunctioning ONT is considered a rogue ONT." EX1004, [0003].

Regulating By ONT (FIG. 9)

One example of a system/apparatus that performs such regulating of rogue behavior is "by rogue ONT 14 itself," which includes "an agent 900 (similar to the agent explained in detail regarding FIG. 5) that monitors and modifies (corrects) the operation of rogue ONT 14" as shown and described with respect to O'Byrne's Figure 9. EX1004, [0064]-[0072]; EX1003, ¶113.

Regulating By OLT (FIG. 10)

Another example of a system/apparatus is the OLT 12 "that monitors and corrects the operation of a possible rogue ONT 14" is shown and described with respect to O'Byrne's Figure 10. EX1004, [0073]-[0081]; EX1003, ¶114.

[15.1] "an output indicator monitor;"

O'Byrne discloses an output indicator monitor. EX1003, ¶¶115-119.

Regulating By ONT (FIG. 9)

In the system described with respect to O'Byrne's Figure 9, O'Byrne's ONT 14 includes an output indicator monitor that monitors the output of ONT 14 itself. EX1004, [0065]-[0067]; EX1003, ¶116. "At step 910, the status of various components of possible rogue ONT 14 is determined; for example, the status of hardware sub-components such as chip-level errors (e.g., laser error, interface chip errors, encryption errors), process timing overruns, and upstream time-slot 60, 62, 64 overruns. The status monitoring providing agent 900 with performance metrics

of possible rogue ONT 14." EX1004, [0066], *see also* [0065] ("monitors…the operation of rogue ONT 14").

As articulated above with respect to element [1.1], multiple reasons would have prompted a POSITA to implement O'Byrne's ONT 14 to monitor optical power of the ONT 14 (in the method of Figure 9) according to O'Byrne's suggested improvement with respect to O'Byrne's Figures 3 and 6A-6C. EX1003, ¶117; EX1004, [0003], [0026], [0038]-[0044], [0064]-[0072], FIGS. 3, 6A-6C, 9.

<u>Regulating By ONT (FIG. 10)</u>

In the system described with respect to O'Byrne's Figure 9, O'Byrne's OLT 12 includes an output indicator monitor that monitors output indicators of the ONT 14. EX1004, [0073] ("FIG. 10 illustrates an embodiment of an OLT agent 1000 that monitors and corrects the operation of a possible rogue ONT 14. In general, OLT agent 1000 (operating as a process within OLT 12) analyzes information related to possible rogue ONT 14 to determine whether action should be taken to control or disable ONT 14."), [0074] ("At step 1010, OLT 12 monitors ONT 14 and records performance information as well as alarm information related to ONT 14."); EX1003, ¶118.

As articulated above with respect to element [1.1], multiple reasons would have prompted a POSITA to implement O'Byrne's OLT 12 to monitor optical power of the ONT 14 (in the method of Figure 10) according to O'Byrne's

suggested improvement with respect to O'Byrne's Figures 3 and 6A-6C. EX1003, ¶119; EX1004, [0003], [0026], [0038]-[0044], [0066], [0073]-[0082], FIGS. 3, 6A-6C, 10.

[15.2] "a register for storing a suspect rogue flag if the output indicator monitor detects that an output indicator threshold has been exceeded during a monitoring window;"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶120-122.

Regulating By ONT (FIG. 9)

In the system described with respect to O'Byrne's Figure 9, O'Byrne's ONT 14 includes a register ("memory") in which the ONT 14 stores (e.g. "logged in a retained memory" and "saves") error information, such as an output indicator exceeding a threshold. EX1004, [0066]-[0069], *see also* [0036]-[0037], [0082]-[0085]. As explained above with respect to elements [1.1]-[1.3], the ONT stores in its register a suspect rogue flag (i.e. faults, status events) if the ONT detects that the output indicator threshold (the lasing threshold 202 or the normal optical power over time (FIG. 6B)) has been exceeded during the monitoring window (time-slots 60, 62, 64). EX1003, ¶121; EX1004, [0003], [0036]-[0044], [0064]-[0072], FIGS. 3, 6A-6C, 9.

Regulating By OLT (FIG. 10)

In the system described with respect to O'Byrne's Figure 10, O'Byrne's OLT 12 includes a register in which the OLT 12 stores (e.g. "records" and "logs") error information, such as an output indicator exceeding a threshold. EX1004, [0073]-[0076]. As explained above with respect to elements [1.1]-[1.3], the OLT stores in its register a suspect rogue flag (i.e. performance information and alarm information) if the OLT detects that the output indicator threshold (the lasing threshold 202 or the normal optical power over time (FIG. 6B)) has been exceeded during the monitoring window (time-slots 60, 62, 64). EX1003, ¶122; EX1004, [0003], [0038]-[0044], [0073]-[0081], FIGS. 3, 6A-6C, 10.

[15.3] "a reader for reading the register to determine whether a suspect rogue flag has been set; and"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶123-125.

<u>Regulating By ONT (FIG. 9)</u>

In the system described with respect to O'Byrne's Figure 9, the ONT 14 includes a reader for reading the ONT 14's register (memory) to determine whether a suspect rogue flag (i.e. faults, status event) has been set in earlier steps. EX1004, [0067] ("At step 912, ONT 14 determines whether a hardware problem is deemed to exist based on data collected in step 910."), [0069] ("At step 916, ONT

14 determines whether a software problem is deemed to exist based on data collected in step 910."), *see also* [0036]-[0037], [0082]-[0085]; EX1003, ¶124.

Regulating By OLT (FIG. 10)

In the system described with respect to O'Byrne's Figure 10, the OLT 12 includes a reader for reading the OLT 12's register to determine whether a suspect rogue flag (i.e. performance information and alarm information) has been set in earlier steps. EX1004, [0075] ("At step 1012, OLT 12 reviews the information collected and logged in steps 1010, 1014 and determines whether an ONT 14, 16, 18 is experiencing a problem."), [0077] ("At step 1016, OLT 12 reviews the information collected and logged in steps 1010, 1014 and determines whether an ONT 14, 16, 18 is experiencing a chronic problem (i.e., rogue ONT 14 resets every 10 seconds or rogue ONT 14 is continuously interfering with neighboring upstream time-slots 60, 62, 64)."), [0079] (stating "OLT 12 may determine the performance problem based on historical information related" and "OLT 12 logs interference between neighboring upstream time-slots 60, 62, 64"); EX1003, ¶125.

[15.4] "a determiner for determining whether to disable the optical transmitter if a suspect rogue flag has been set; and"

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶126-128.

Regulating By ONT (FIG. 9)

In the system described with respect to O'Byrne's Figure 9, O'Byrne describes the agent 900 of the ONT 14 determining whether to disable the optical transmitter of the ONT in steps 912, 914, 916, and 918. EX1004, [0065]-[0070]. In steps 912 and 914, the ONT 14 "determines whether a hardware problem is deemed to exist based on data collected in step 910" and then "ONT 14 may shut down the laser (not shown) used for transmitting messages within an upstream time-slot 60, 62, 64." EX1004, [0067]-[0068]. In steps 916 and 918, the ONT 14 "determines whether a software problem is deemed to exist based on data collected in step 910" and then "halts processes that are behaving outside of predetermined norms." EX1004, [0069]-[0070]; EX1003, ¶127.

<u>Regulating By OLT (FIG. 10)</u>

In the system described with respect to O'Byrne's Figure 10, O'Byrne describes the OLT 12 determining whether to disable the optical transmitter of the ONT in steps 1012, 1014, 1016, and 1018. EX1004, [0075]-[0078]. In steps 1012 and 1014, the OLT 12 determines "disturbance of neighboring upstream time-slots 60, 62, 64" and then sends a command to turn off and reset the ONT. EX1004, [0075]-[0076]. In steps 1016 and 1018, the OLT 12 determines "ONT 14 is continuously interfering with neighboring upstream time-slots 60, 62, 64" and then sends a command to shut down the ONT. EX1004, [0077]-[0078] ("At step 1018,

rogue ONT 14 is deemed to have a chronic problem. In response, OLT 12 issues a command for rogue ONT 14 to shut down."); EX1003, ¶128.

[15.5] "a timer for timing the duration between a temporary disable command and an enable command."

O'Byrne discloses this element in connection with each method in Figures 9 and 10. EX1003, ¶¶129-136.

Regulating By ONT (FIG. 9)

As described above with respect to claims 1 and 5, the system and method described with respect to O'Byrne's Figure 9 includes multiple examples of commands to temporarily disable and commands to enable. EX1004, [0020], [0043]-[0044], [0064]-[0072], [0076], [0078], [0098]; EX1003, ¶130. For example, the agent 900 of ONT 14 may issue a first command to temporarily "shut down the laser" and later issue a second commend to "reboot chips…in order to bring ONT 14 back to a normal operating condition." EX1004, [0068]; EX1003, ¶130. A POSITA would have understood that the agent 900 of the ONT 14 would have included a timer for timing the duration between the temporary disable command and the enable command, as such timers were the conventional way for determining when to send a command like an enable command to reboot chips. EX1003, ¶130.

To the extent that O'Byrne does not explicitly say that the ONT 14 includes a timer for timing the duration between the temporary disable command and the enable command in the system of Figure 9, a POSITA would have considered it obvious to do so in view of O'Byrne's own Figure 10 and related disclosure. EX1003, ¶131. As explained below with reference to Figure 10, O'Byrne teaches: "At step 1030, where ONT 14 has been shut down, ONT 14 may be sent a message to re-activate **after a predetermined time**." EX1004, [0081] (emphasis added). Therefore, O'Byrne's OLT 12 includes a timer in order to time the duration ("predetermined time") between the temporary disable commend (the "shut down") and the enable command ("message to re-activate"). EX1003, ¶131; EX1004, [0081]. A POSITA would have been prompted to implement at least part of the embodiment of Figure 10 to use such a conventional timer in the ONT of Figure 9 to ***temporarily*** suspend and reactivate the operation of the ONT to avoid disruption on PON. EX1004, [0072], [0081].

Indeed, multiple reasons would have prompted such an implementation by early 2009. EX1003, ¶132. **First**, a POSITA would have been motivated to employ a conventional timer (as suggested by O'Byrne's Figure 10 solution) in the ONT of Figure 9 so as to facilitate reenabling the ONT after failure. EX1003, ¶132. O'Byrne discloses for Figure 9 to "**reboot chips**…in order to bring ONT 14 back to a normal operating condition" and discloses for Figure 10 the use of "a

message to re-activate **after a predetermined time**." EX1004, [0068], [0081] (emphasis added). Accordingly, a POSITA would have recognized that using such a timer would have beneficially allowed for reenabling the ONT after a predetermined time as suggested by O'Byrne itself. EX1003, ¶132.

Second, a POSITA would have been motivated to use a timer (as suggested by O'Byrne's Figure 10 solution) in the ONT of Figure 9 before reestablishing the handshake to avoid overloading the system. EX1003, ¶133. For example, a POSITA would have recognized that, if the ONT immediately and repeatedly sent messages to the OLT in attempt to reestablish the handshake after a failure, the ONT might monopolize the communication with the OLT and prevent or hinder communication between the OLT and other ONTs. EX1003, ¶133. As such, the POSITA would have been prompted to use of a conventional timer (as suggested in Figure 10) as a predictable and practical means of allowing attempts to reconnect yet limiting their frequency. EX1003, ¶133.

Third, O'Byrne's disclosure with respect to Figure 9 explicitly suggests looking to the suggestions of O'Byrne's Figure 10, which suggests the use of a conventional timer. EX1004, [0071] ("At step 920, ONT 14 determines whether a control message has been received (***explained below in detail with respect to FIG.10***)." (emphasis added)). Accordingly, this explicit suggestion would have prompted a POSITA to look to the teachings of Figure 10 when considering the

teachings of Figure 9. EX 1003, ¶134; *Boston Scientific Scimed, Inc. v. Cordis*, 554 F.3d 982, 990 (Fed. Cir. 2009) ("combining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.").

Fourth, O'Byrne also teaches "the agent checks to see whether a status indicator is being updated by the process (the status indicator being updated by the process when self-diagnostics are OK and execution threads are timely handled)" (see EX1004, [0036]), but does not specify how frequently that happens. EX1003, ¶135. As such, this part of O'Byrne's express teaching would have prompted a POSITA to use a timer (as already suggested by Figure 10) to set the frequency of such checks in a conventional and practical manner that limits how often such a status indicator is updated. EX1003, ¶135.

<u>Regulating By OLT (FIG. 10)</u>

In the system described with respect to O'Byrne's Figure 10, O'Byrne explains: "At step 1030, where ONT 14 has been shut down, ONT 14 may be sent a message to re-activate after a **predetermined time**. This allows OLT 12 to re-activate ONT 14 to verify if the error condition still exists." EX1004, [0081] (emphasis added). Accordingly, O'Byrne's OLT 12 includes a timer in order to time the duration ("predetermined time") between the temporary disable command

(the "shut down") and the enable command ("message to re-activate"). EX1003, ¶136; EX1004, [0081].

B. GROUND 2 – O'Byrne in view of Bernard (Claim 15)

[15.pre] "Apparatus for regulating rogue behavior in an optical transmission device, comprising:"

As explained above with respect to Ground 1, element [15.Pre], to the extent that the preamble is limiting, O'Byrne discloses the recited apparatus as described with respect to Figure 9 (ONT 14 and its agent 900) and with respect to Figure 10 (OLT 12). EX1004, [0003], [0064]-[0072], [0073]-[0081]; EX1003, ¶138.

[15.1] "an output indicator monitor;"

As explained above with respect to Ground 1, element [15.1], O'Byrne discloses an output indicator monitor as described with respect to both Figures 9 and 10. EX1003, ¶139; EX1004, [0003], [0026], [0038]-[0044], [0064]-[0082], FIGS. 3, 6A-6C, 9, 10.

[15.2] "a register for storing a suspect rogue flag if the output indicator monitor detects that an output indicator threshold has been exceeded during a monitoring window;"

As explained above with respect to Ground 1, element [15.2], O'Byrne discloses the claimed register as described with respect to both Figures 9 and 10.

EX1003, ¶140; EX1004, [0003], [0036]-[0044], [0064]-[0085], FIGS. 3, 6A-6C, 9, 10.

[15.3] "a reader for reading the register to determine whether a suspect rogue flag has been set; and"

As explained above with respect to Ground 1, element [15.3], O'Byrne discloses the claimed reader as described with respect to both Figures 9 and 10. EX1003, ¶141; EX1004, [0036]-[0037], [0067], [0069], [0075], [0077], [0079], [0082]-[0085].

[15.4] "a determiner for determining whether to disable the optical transmitter if a suspect rogue flag has been set; and"

As explained above with respect to Ground 1, element [15.4], O'Byrne discloses the claimed determiner as described with respect to both Figures 9 and 10. EX1003, ¶142; EX1004, [0065]-[0070], [0075]-[0078].

[15.5] "a timer for timing the duration between a temporary disable command and an enable command."

The predicable combination of O'Byrne in view of Bernard provides the claimed timer. EX1003, ¶¶143-150. As explained above with respect to Ground 1, element [15.5], O'Byrne discloses or suggests the claimed timer for use with the systems described in both Figures 9 and 10. *Supra*, Analysis of Ground 1, element [15.5].

However, to the extent that the Board concludes that O'Byrne does not explicitly disclose the claimed timer, such timers were commonly implemented in similar prior art systems, as evidenced by Bernard. EX1003, ¶145. For example, Bernard teaches disabling and enabling passive optical network upstream transmissions, as well as timers for timing duration between the commands for disabling and enabling the passive optical network upstream transmissions. EX1006, [0019]-[0020], [0034]-[0035], [0071], FIG. 3; EX1003, ¶145. After "upstream communications of the ONT are disabled," then "a duration of the ONT's being in the disabled state of upstream communications is timed." EX1006, [0033]-[0034]. The timing occurs until "the ONT determines whether the timing of the duration of the ONT's being in the disabled state of upstream communications reaches a terminal count (330). If the ONT reaches a terminal count, the ONT enters an enabled state of upstream communications (350)," which means the ONT issues a command to enable upstream communications after a predetermined period of disability. EX1006, [0035]; EX1003, ¶146. The timing is performed by a 'timer." EX1006, [0071] ("The single timer may include an indicator that indicates when the timer has reached any number of terminal counts.").

Multiple reasons would have prompted a POSITA to modify the system of O'Byrne to include a conventional timer (as suggested by Bernard) for achieving

known benefits in each of O'Byrne's ONT 14 (O'Byrne's Figure 9) and O'Byrne's OLT 12 (O'Byrne's Figure 10). EX1003, ¶¶147-150.

First, a POSITA would have been motivated to implement a timer (as suggested by Bernard) to O'Byrne's ONT 14 and/or OLT 12 in order to facilitate reenabling the ONT after failure. EX1003, ¶147. Bernard expressly suggested a predictable improvement for O'Byrne in which O'Byrne's ONT 14 would be reenabled after the duration of a timer. *See* EX1006, [0031]-[0035]; EX1003, ¶147. Similarly, a POSITA would have recognized the benefit of the same predictable improvement for O'Byrne's OLT 12, which would send a message to the ONT 14 to attempts to restart and reenable communication between O'Byrne's OLT 12 and the ONT 14 after the duration of a timer. *See* EX1004, [0081]; EX1006, [0019]-[0021], [0024], [0031]-[0035]; EX1003, ¶147.

Second, a POSITA would have been motivated to use a timer (as suggested by Bernard) before reestablishing communication to avoid overloading the system. EX1003, ¶148. A POSITA would have understood that, if the ONT immediately and repeatedly sent messages to the OLT in attempt to reestablish communication after a failure, the ONT might monopolize the communication with the OLT and prevent or hinder communication between the OLT and other ONTs. EX1003, ¶148. Thus, the POSITA would have been prompted to use a conventional timer in O'Byrne's ONT 14 and/or OLT 12 (as suggested by Bernard) as a predictable

and practical means of allowing attempts to reconnect yet limiting their frequency. EX1003, ¶148.

Third, O'Byrne already taught with respect to O'Byrne's Figure 10 that "where ONT 14 has been shut down, ONT 14 may be sent a message to re-activate after a **predetermined time**" (EX1004, [0081], emphasis added) without much further elaboration. Based on O'Byrne's suggestion, a POSITA would have been motivated to implement a conventional timer as taught by Bernard for purposes of determining O'Byrne's "predetermined time" in the OLT 12. EX1003, ¶149. Similarly, O'Byrne's teaching of reactivation "after a **predetermined time**" with respect to Figure 10 would have also prompted a POSTA to similarly apply the conventional timer as taught by Bernard to O'Byrne's ONT 14 for purposes of identifying a time between disabling and enabling commands. EX1003, ¶149.

Fourth, O'Byrne also teaches "the agent checks to see whether a status indicator is being updated by the process (the status indicator being updated by the process when self-diagnostics are OK and execution threads are timely handled)" (see EX1004, [0036]), but does not specify how frequently that happens. EX1003, ¶150. A POSITA would have been prompted to use a timer (as suggested by Bernard) to set the frequency of such checks in a conventional and practical manner to limit how often such a status indicator is updated. EX1003, ¶150. The same reasoning would likewise prompt the use of a timer (as suggested by

Bernard) in either of O'Byrne's ONT 14 (Figure 9) or O'Byrne's OLT 12 (Figure 10). EX1003, ¶150.

VIII. INSTITUTION SHOULD NOT BE DISCRETIONARILY DENIED

A. The *Fintiv* Factors Weigh in Favor of Institution—35 U.S.C. § 314(a)

In *Apple Inc. v. Fintiv, Inc.*, the Board enumerated six factors that provide a "holistic view" as to "whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in [a] parallel proceeding." IPR2020-00019, Paper 11 at 2-3 (PTAB "precedential" Mar. 20, 2020) ("*Fintiv I*"). Guided by precedent, Petitioner took affirmative steps to promote the Board's efficiency and fairness goals. Petitioner initiated this proceeding with exceptional diligence, filed a single petition narrowly focused on specific claims within a mere seven weeks of learning of Patent Owner's asserted claims, and provided a stipulation far more expansive than the example in *Sand Revolution* to eliminate any possibility of overlapping prior art issues between the instituted IPR proceeding and the Related Litigation. These facts, paired with the strong merits of Grounds 1-2, provide compelling reasons to institute. *Sand Revolution II, LLC v. Continental Intermodal Group*, IPR2019-01393, Paper 24, 12 (PTAB "Informative" June 16, 2020).

Relevant Facts—On June 17, 2020, Patent Owner filed twelve separate

infringement actions against Petitioner involving twelve unrelated patents asserted against dozens of unrelated products. *See* EX1100. These twelve lawsuits are concurrently pending in the Western District of Texas ("the Court") before the Honorable Judge Alan D. Albright. *Id*. The action involving the '446 patent was assigned Case No. 6:20-cv-00542 ("the Related Litigation"). The remaining eleven lawsuits are identified by different cases numbers and are not formally consolidated.

Patent Owner served its preliminary infringement contentions on October 9, 2020. *See* EX1101, 8, 14. Petitioner's preliminary invalidity contentions are due December 7, 2020. *Id*. On November 30, 2020, Petitioner stipulated in the Related Litigation that, if *inter partes* review is instituted on Grounds 1-2 in this proceeding, Petitioner will not pursue in the Related Litigation the same Grounds 1-2 from this IPR *nor any other possible prior art printed publication grounds based on any reference* from Grounds 1-2. *See* EX1102.

The Court set a *Markman* hearing for April 15, 2021, and the parties are scheduled to exchange terms for construction on December 21, 2020. *See* EX1103, 10; EX1101, 9, 15. Per the Court's default order, fact discovery will formally open on April 19, 2021, one business day after the *Markman* hearing. *See* EX1104, 9.

For purposes of planning earlier dates throughout discovery, etc., the Court

set a placeholder trial date for all twelve cases on the same day—April 11, 2022—but promptly informed that parties that "the Court does not intend of trying all 12 patents in one trial." EX1105, 1. In other words, a jury trial is scheduled for April 11, 2022, but neither the Court nor any party knows which one of the twelve asserted patents will be the subject of the trial on that date. This placeholder trial date was set for all twelve cases "due to logistics and to provide flexibility" up through the *Markman* stage, but there is significant uncertainty as to whether the '446 patent will be the subject of a jury trial starting on April 11, 2022 or a much later jury trial. *Id.*

The parties were also informed that the Court "currently has no intention of consolidating" the twelve lawsuits for a jury trial. EX1106, 1. In this communication, the Court acknowledged the possibility that a subset of "certain patents" among the twelve patents "may" be consolidated. *Id*. But again, even in those circumstances, there is significant uncertainty as to whether the '446 patent will be grouped in that possible subset of "certain patents" and whether that subset will be the subject of a jury trial starting on April 11, 2022 or a much later trial date. *Id.*

Given the filing date of this Petition, the Board's Institution Decision and Final Written Decision will likely issue in early June of 2021 and 2022, respectively.

Factor 1 (Stay)—No party in the Related Litigation has request a stay at this time. Huawei currently plans to seek a motion to stay after the Board's decision to institute IPR here because, in Judge Albright's court, a motion filed earlier would be premature. Again, the facts at play here are unique. There are twelve distinct lawsuits (asserting twelve unrelated patents) all unrealistically scheduled for trial on the same date. In such unique circumstances, it is unclear how Judge Albright would rule on a motion to stay for the particular lawsuit involving the '446 patent, especially after IPR is instituted against the '446 patent. This cloud of uncertainty means Factor 1 is neutral.

Factor 2 (Trial Date)—While the Court set April 11, 2022 as a placeholder date for trial, it is far from certain whether the '446 patent will be part of that trial because "the Court does not intend of trying all 12 patents in one trial." EX1105, 1. The parties were already informed that the Court currently has no intention of consolidating any of the twelve separate actions, and it is simply not possible to conduct twelve trials all starting on April 11, 2022. *Id.*; EX1106, 1. While the Court "may" consolidate a subset of "certain patents" among the twelve, there is significant uncertainty as to whether the '446 patent will be part of that subset and whether that subset will be the subject of a jury trial starting on April 11, 2022. EX1106, 1. The only certainty at this time is that a significant number of the 12 patents will not be part of the April 11, 2022 trial. EX1105, 1. And the only

plausible solution is to spread the trial dates out over a period of time, which will almost certainly result in later trial dates in multiple cases. Presently, there is no hint as to how the scheduling shuffle will play out.

The *Fintiv* panel noted that the Board "generally take[s] courts' trial schedules at face value absent some strong evidence to the contrary." *Apple Inc. v. Fintiv, Inc*., IPR2020-00019, Paper 15, 13 (PTAB, "informative," May 13, 2020) ("*Fintiv II*"). For the reasons detailed above, such "strong evidence" exists on this record. Due to Patent Owner's litigation tactics, neither the Court nor any party knows which one of the twelve asserted patents will be the subject of the trial starting on April 11, 2022. There is, in effect, no *certain* date for a jury trial that specifically addresses the '446 patent.

The "informative" guidance in *Sand Revolution* aligns with the facts of this case. *Sand Revolution*, IPR2019-01393, Paper 24 at 8-10. Even if the '446 patent was selected as the particular patent for a jury trial on April 11, 2022 (mere speculation at this time), the narrow gap in time between the Court's placeholder trial date (April 11, 2022) and the Board's projected Final Written Decision (June of 2022) is just two months. The panel in *Sand Revolution*, also facing meaningful questions of uncertainty about the trial date, weighed Factor 2 "marginally" *against* denial with a three-month time gap. *Id.* The *Sand Revolution* guidance demonstrates the proper result when the district court's "evolving schedule" makes

it "unclear" when the trial would be held. *Id.* A similar lack of clarity exists in this case but for a slightly different reason—the placeholder trial date is plainly overbooked several times over, and there is significant uncertainty as to whether the '446 patent will be addressed in the April 11, 2022 jury trials or one of the inevitable later jury trials.

Similarly, the Board's analysis in *Google LLC, et al. v. Parus Holdings, Inc.* is compelling. *See* IPR2020-00846, Paper 9 at 12-14 (PTAB Oct. 21, 2020). There, the district court reserved a broad range of "predicted" trial dates but declined to specify further. *Id*. (noting a trial date range of July 12-30, 2021, and further noting the court's statement that it was "not going to pick a date right now"). With "only three months" between the range of trial dates and a final written decision, the Board deemed Factor 2 "neutral" based on "substantial uncertainty in the Texas court's 'Predicted Jury Selection/Trial' date." *Id*.

The two-month time gap presently at issue is narrower than *Sand Revolution* and the trial date uncertainty is comparable to *Google v. Parus*. The well-reasoned analysis by the Board in those two cases weighed Factor 2 either against denial or neutral, respectively. A similar outcome is appropriate here.

Factor 3 (Investment)—The Related Litigation is currently in its infancy. Petitioner has yet to serve its preliminary invalidity contentions, and the parties have yet to exchange proposed terms for construction. Petitioner acted promptly in

response to Patent Owner's identification of asserted claims in preliminary infringement contentions, filing this Petition only about seven weeks after the asserted claims were finally revealed for the twelve asserted patents. *See* EX1101, 8, 14.

At the projected date of institution (June of 2021), the fact discovery period will be just past the quarter-way mark, and expert reports still about five months out. (*See* EX1103, 10 (*Markman* hearing set for April 15, 2021); EX1104, 9-10 (30-week fact discovery period opens one business day after *Markman*). Beyond a *Markman* order, which is not dispositive here because the Petition does not rise or fall with any specific construction, the Court will almost certainly have not issued any substantive orders relevant to validity over the prior art.

The facts here compare favorably to *Fintiv*. In that case, also co-pending with litigation at the Western District of Texas, the petitioner filed *five months* after receiving preliminary infringement contentions—less than *two months* here. *See Fintiv II* at 9. There, "[a]t the time of filing the Petition, the parties were in the midst of preparations for the *Markman* hearing," while here, the parties have not even exchanged terms. *Id*.

The "informative" guidance in *Sand Revolution* is telling here too. By the time of institution in this proceeding, the Related Litigation will be at a similar posture where "aside from the district court's *Markman* Order, much of the district

court's investment relates to ancillary matters untethered to the validity issue itself." *Sand Revolution*, IPR2019-01393, Paper 24 at 10-11. The parallels are also notable because:

> [M]uch work remains in the district court case as it relates to invalidity: fact discovery is still ongoing, expert reports are not yet due, and substantive motion practice is yet to come. Thus, although the parties and the district court have invested effort in the related district court litigation to date, further effort remains to be expended in this case before trial.

Id. at 11 (internal citation omitted). Given the alignment with *Sand Revolution*, Factor 3 should weigh "only marginally, if at all, in favor of exercising discretion to deny." *Id.* Alternatively, it is reasonable to characterize this factor as firmly "neutral" given Petitioner's even greater diligence in preparing this Petition as compared to petitioner in the *Fintiv* decision.

Factor 4 (Overlap)— Factor 4 strongly supports institution. Petitioner stipulated in the Related Litigation that, if *inter partes* review is instituted on Grounds 1-2 in this proceeding, Petitioner will not pursue Grounds 1-2 in the Related Litigation, nor any other possible prior art printed publication grounds based on any reference from Grounds 1-2. EX1102. Petitioner's contingent stipulation removes the possibility of the Board deciding prior art issues that overlap with invalidity grounds in an earlier jury trial (if any). Critically, this

stipulation is significantly broader than what the Board favorably considered in the informative *Sand Revolution* case. *See* IPR2019-01393, Paper 24 at 11-12.

Factor 5 (Parties)—Because the parties here and at the District Court are the same, Factor 5 favors denial if trial precedes the Board's Final Written Decision and favors institution if the opposite is true (due to the 35 U.S.C. 315(e)(2) estoppel provision). *Google*, IPR2020-00846, Paper 9 at 20-21 ("[W]e decline to speculate as to whether we are likely to address the challenged patent before the Texas court. Thus, [Factor 5] is neutral."). Neither circumstance can be confirmed in this case without improper speculation because the *actual* date of a jury trial involving the '446 patent is uncertain. For the reasons detailed above, the District Court has only established a placeholder date for an entire set of twelve patent lawsuits, along with an explanation to the parties that "the Court does not intend of trying all 12 patents in one trial." EX1105, 1. Under these unique circumstances, Factor 5 is neutral.

Factor 6 (Merits and Other Circumstances)—The merits of this Petition are particularly strong. As discussed, the prior art and arguments at issue here are materially different from those considered by the Examiner during prosecution. The strength of the merits alone is enough to outweigh any inefficiencies born of parallel litigation. *See Fintiv* at 15.

And there are additional circumstances that also favor institution, such as the

effect on "the economy [and] the integrity of the patent system." *Consolidated Trial Practice Guide* ("*CTPG*"), p.56 (quoting 35 U.S.C. § 316(b)). Fully vetting an eleven-year-old patent (filed 2009) only now alleged to cover use of a pre-existing standard that the public has come to rely on would be beneficial to the economy. *See* EX1100, 157-164.

The integrity of the patent system equally weighs in favor of institution. The obviousness analysis in Section VII of this Petition shows that the '446 patent's Challenged Claims are too broad, and the dubious prosecution record shows that the claims were allowed under the mistaken belief that the prior art failed to teach "removing the suspect rogue flag from the register if it is determined that the output threshold was not exceeded in a monitoring window occurring after the suspect rogue flag has been set" (*see supra* Section IV.B). AIA trials were intended to "improve patent quality and limit unnecessary and counterproductive litigation costs." *CTPG*, p.56 (quoting H.R. Rep. No. 112–98, pt. 1, at 40 (2011)). This case provides an opportunity to fulfill those objectives. The quality of the '446 patent would undoubtedly be improved by cancelling the unpatentable claims presently under challenge. And such a result could avert future litigation (and licensing) costs caused by Patent Owner's continued assertion efforts.

For all these reasons, Factor 6 and the *Fintiv* Factors as a whole strongly favor institution.

B. The *Becton, Dickinson* Factors Weigh in Favor of Institution—35 U.S.C. § 325(d)

Neither of O'Byrne or Tyrrell were before the examiner during prosecution. For at least this reason, there is no basis for a determination under 35 U.S.C. § 325(d) that "substantially the same prior art or arguments" were presented to the Office. To be sure, none of the six factors identified in the PTAB's *Becton, Dickinson and Company* decision weigh in favor of such a finding. *See* IPR2017-01586, Paper 8 at 17-28 (PTAB Dec. 15, 2017); *SHDS, Inc. v. Truinject Corp.*, IPR2020-00935, Paper 12 at 11-12 (PTAB Nov. 17, 2020).

IX. CONCLUSION

Petitioner requests IPR of the Challenged Claims pursuant to Grounds 1-2.

Respectfully submitted,

Dated 11/30/2020

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter partes* Review totals 13,958 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on November 30, 2020, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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